

Taking Steps to Control Feed Costs

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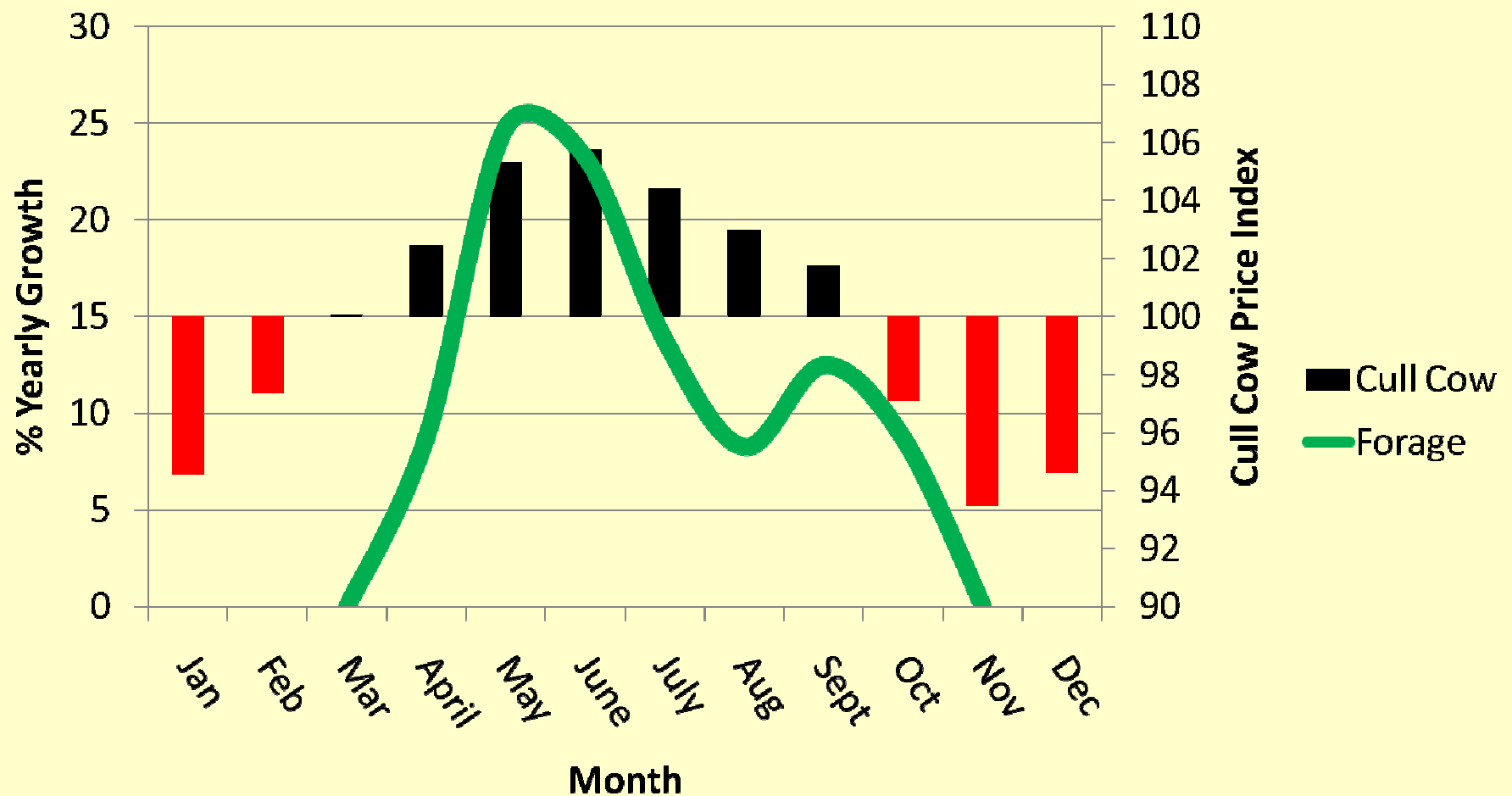
State Extension Beef Specialist – Nutrition



Step 1: Cull Unproductive Cows

- Result
 - Decrease operation nutrient requirements
 - Increase feed available
 - Provide income to purchase
 - Feedstuffs
 - Bred replacements
- Alternative
 - $283 + 205 = 488$ days from generating income
 - Against 2 years worth of expenses

Cull cow seasonal price index 1998 -2007



IA State, John Lawrence Chartbook

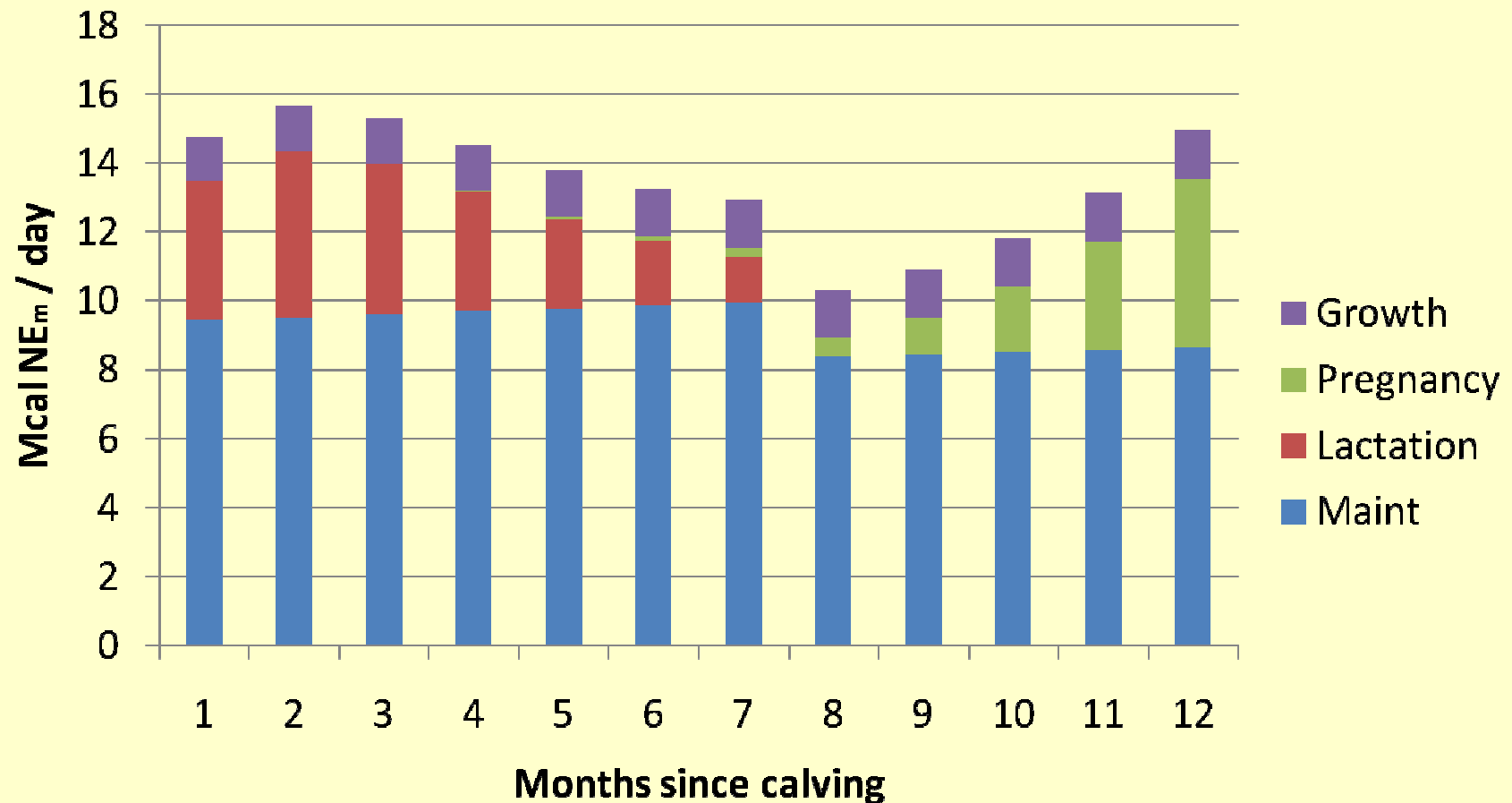
Step 2: Sort cattle by nutrient need

- Growing
- Lactating
- Thin
- Open

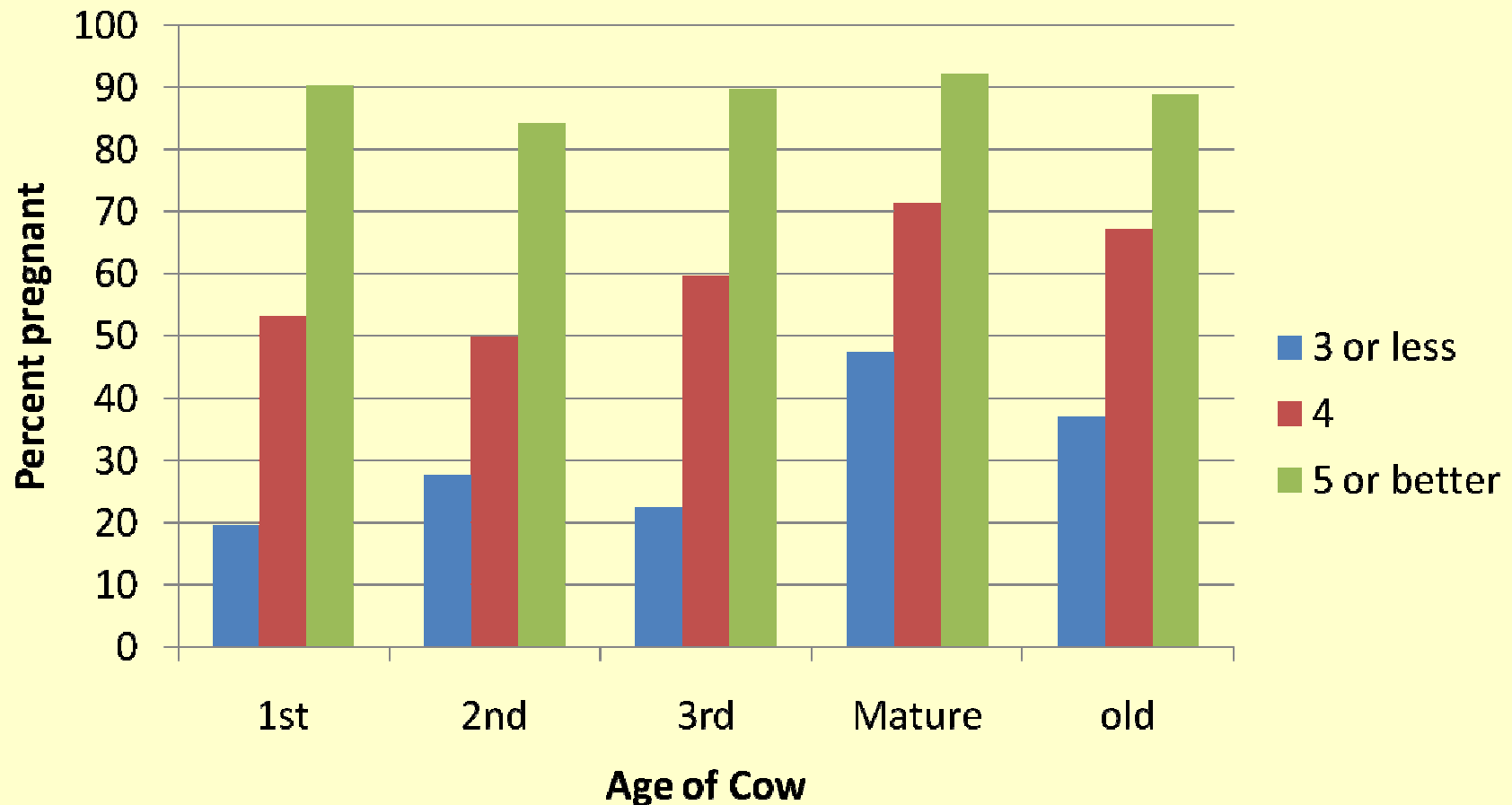


1st calf heifer

Energy requirements



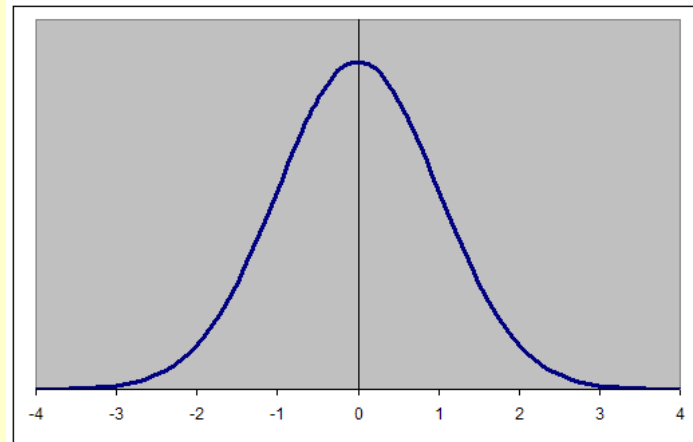
Effect of body condition at pregnancy check



Rae et al., 1993

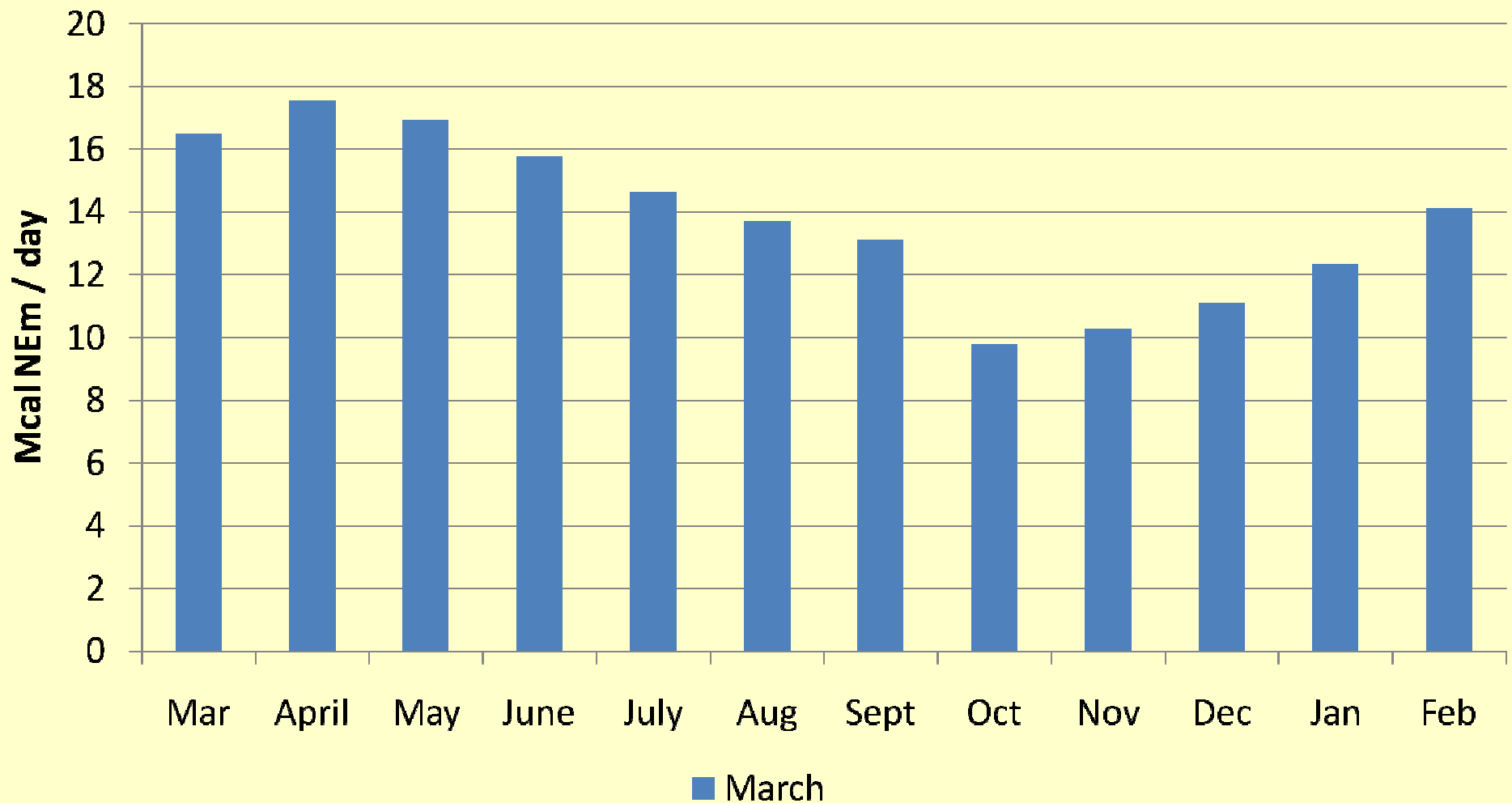
Prioritize nutrient supply

- Sort cows 90 – 120 days prior to calving
 - Thin / Young / Old
 - Fat enough

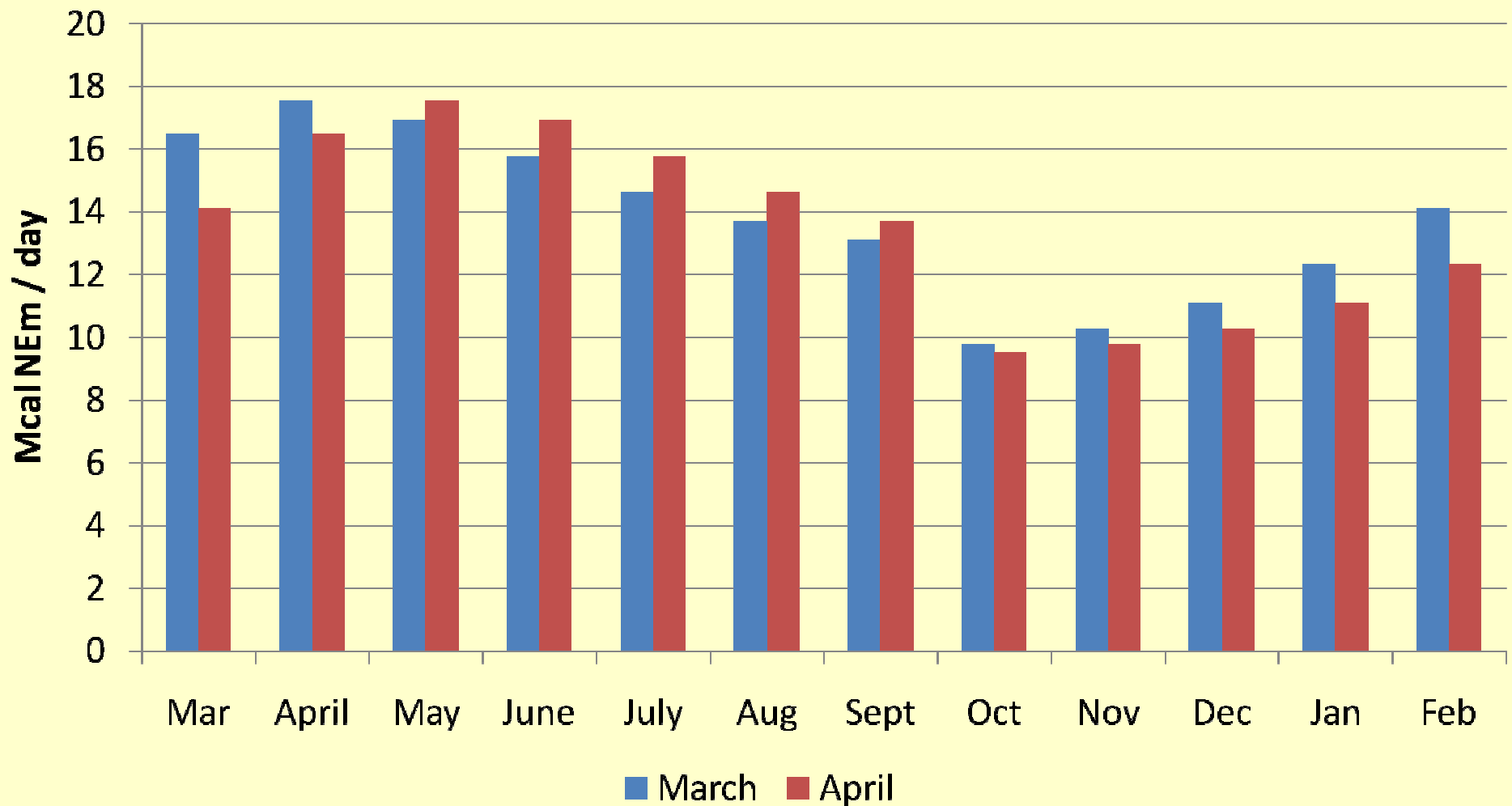


- Consider same total feed supplied
- Increase nutrient supply to critical group

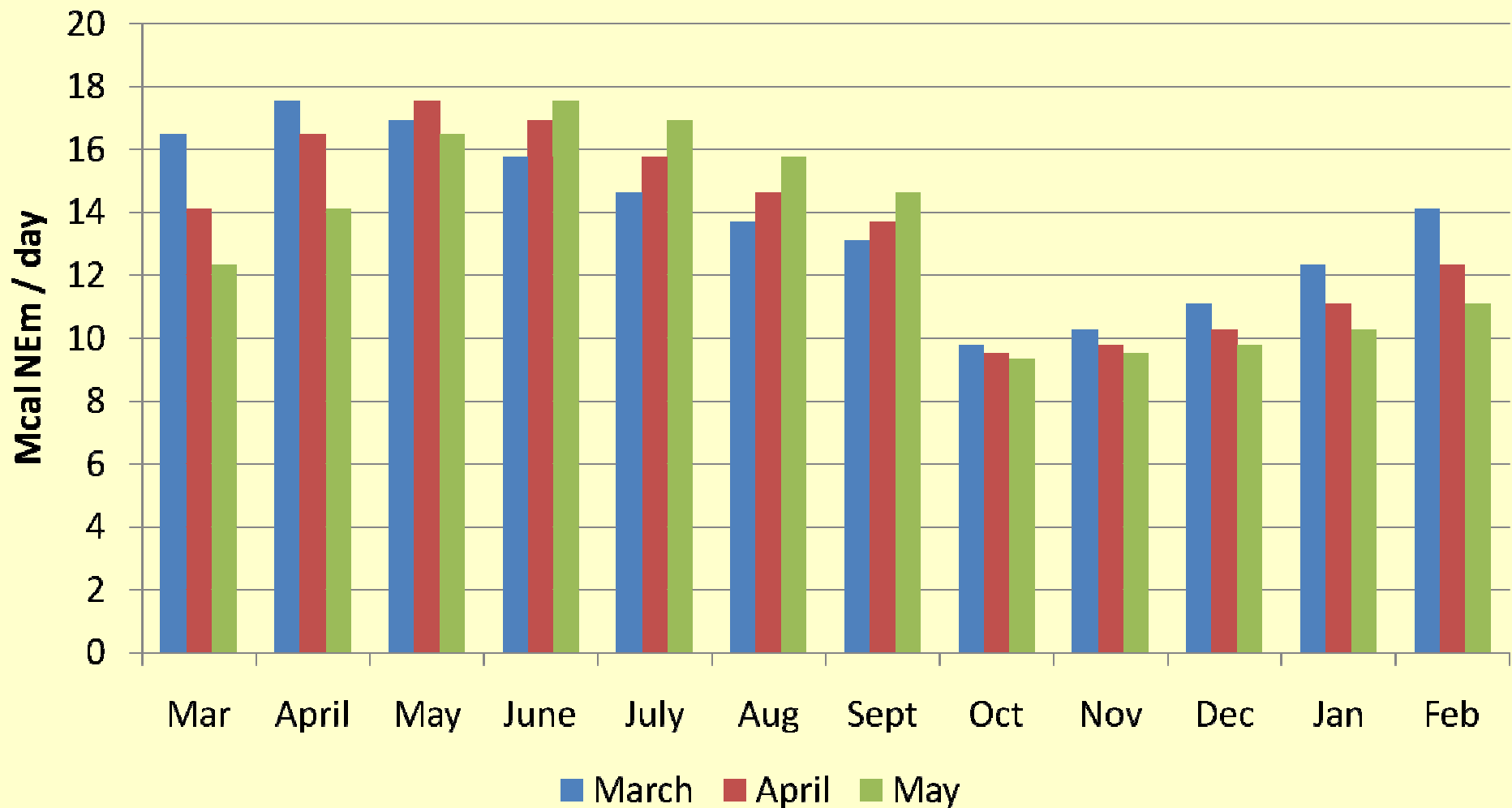
Seasonal nutrient requirements relative to calving month



Seasonal nutrient requirements relative to calving month



Seasonal nutrient requirements relative to calving month

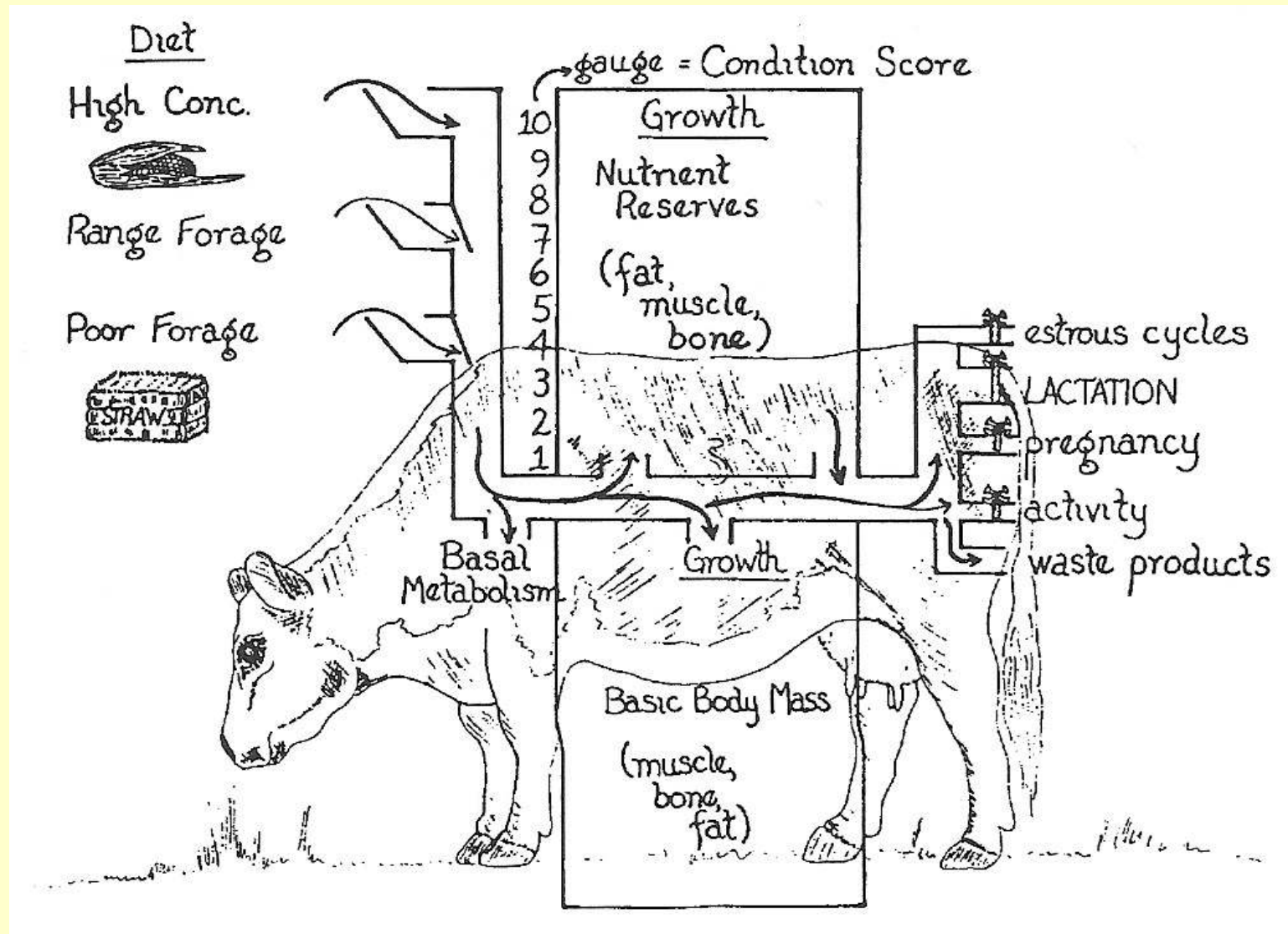


Step 3: Manage body condition

- For optimum reproduction manage cows to have body condition score from 5 to 7 at calving
- **Unless** abundant nutrients are available after calving

Short et al., 1990; Hess et al., 2005

Nutrient partitioning in the cow



Short and Adams, 1988

Mobile feed bucket



Tissue energy use

- Efficiency of body tissue use for lactation is 77 to 84%

Energy reserves mobilized in 1300 lb cow

BCS	Weight	NE, Mcal	Daily lbs corn over 75d
4	1208	212	2.26
5	1300	245	2.61
6	1408	286	3.05

Step 4: Prioritize feed supplies

1. Crop residue fields
2. Pastures and stockpile
3. Quality stored forage
4. Poor quality forage + supplement

Forage testing

- Feed costs are not high enough if forage testing is not utilized
- Sample forages prior to feeding
 - Summer forage tests are not representative of poorly stored hay



Forage quality

- Crude protein indicates quality
 - Less than 7% inadequate protein for rumen
 - Heat damage can lower available protein
- TDN% (total digestible nutrients) = energy
 - TDN:CP, ratio of energy to protein
 - Less than 7 optimizes dry matter intake

Forage quality

- NDF% (neutral detergent fiber)
 - Plant cell wall material
 - Related to intake, 1.2% body weight in NDF
 - $120 / \% \text{ NDF} = \% \text{ body weight forage DMI}$
- ADF% (acid detergent fiber)
 - Related to digestibility

Step 5: Supplement to compliment forage utilization

- Cattle on forage diets should consume no more than 0.3% of body weight in starch-based feeds (corn)
 - 1300 pound cow x 0.003 = 3.9 pounds / day



Efficient forage use starts with supplement selection

Item	Stover	+ Corn	+CGF	+DDG
DMI, % BW	0.75	1.6	1.7	1.4
DM Digest %	39.1 ^a	53.7 ^b	58.9 ^c	59.4 ^c
NDF Digest %	45.4 ^a	42.8 ^a	57.4 ^b	58.2 ^b

^{abc} Means within row with different superscripts differ $P < 0.05$

adapted from Summer and Trenkle 1998, ISU Beef Report

Supplement selection

- As forage quality improves

Distillers Grains



Corn Gluten Feed or Wheat Midds



Soybean Hulls, Hominy or Corn



Step 6: Minimize forage waste

% waste	Forage cost	
	\$ / acre	\$ / ton
0	40.00	60.00
10	44.44	66.67
20	50.00	75.00
30	57.14	85.71
40	66.67	100.00
50	80.00	120.00

Forage feeding losses

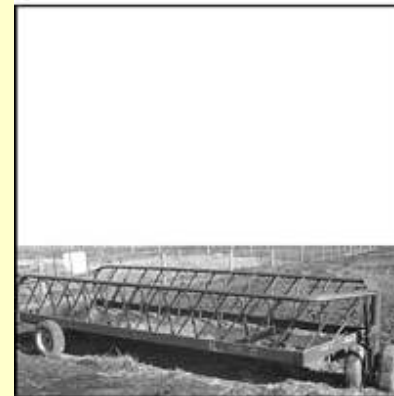
- 2.5 to 15% stored DM lost in storage
- 12 to 25% stored DM lost during feeding

Belyea et al., 1985



Feeder comparison

	Cone	Ring	Trailer	Cradle
Hay waste	3.5 ^a	6.1 ^a	11.4 ^b	14.6 ^b

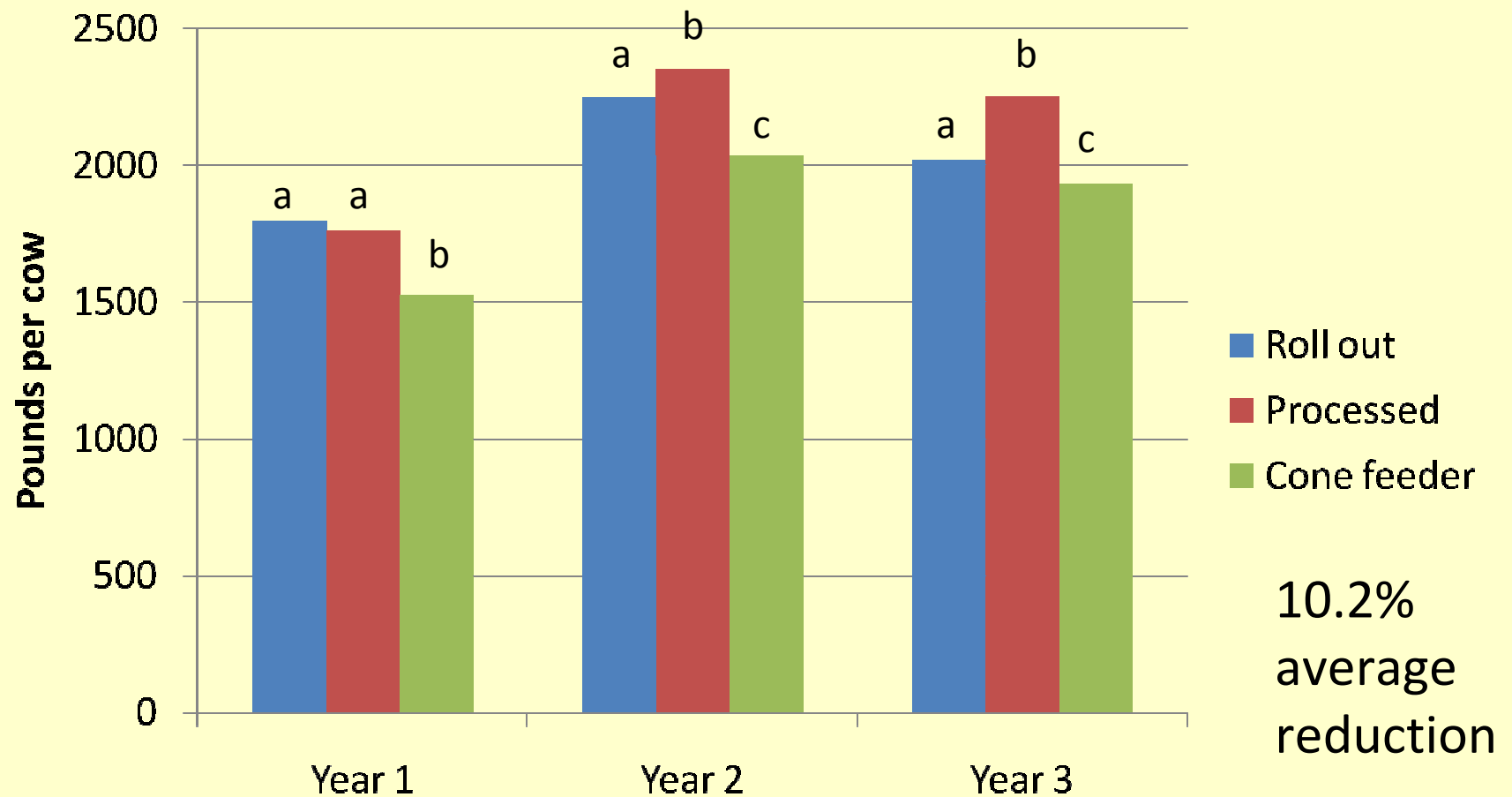


Buskirk et al., 2003

^{ab} Means with different superscripts differ $P < 0.05$



Evaluation of feeding methods



Landblom et al. 2007

abc differs $P < 0.05$

Restrict access to hay to minimize waste

	4 hour	8 hour	24 hour
Hay waste, %	9.8	13.0	18.1

- Waste was not significantly different due to time of access
- Hay disappearance increased with increasing access time



Cunningham et al., 2005; Miller et al., 2007

Step 7: Minimize feeding costs

- Every, third, and sixth day feeding
 - Reduce labor
 - Maintain performance
 - Improves forage digestion

– Bohnert et al., 2002
- Limit energy supplement to maximum of 1% BW on alternate days



Step 8: Price limiting nutrient

	TDN lbs / day	CP, lbs / day
Lactation (20 lb peak)	18.1	3.1
Poor hay (50, 9.0)	15.0	2.7
Ave hay (53, 10.5)	15.9	3.2
Good hay (56, 12.0)	16.8	3.6

Cost comparison – energy \$ per unit TDN

Corn \$ / Bu	\$ / lb TDN
3.75	0.085
4.00	0.090
4.25	0.096

DDGS \$ / ton	\$ / lb TDN
150	0.088
160	0.094
170	0.099

SBH \$ / ton	\$ / lb TDN
140	0.085
150	0.092
160	0.098

Hay \$ / ton	\$ / lb TDN
60	0.068
70	0.080
80	0.091

Step 9: Utilize technology

Segment	WW	ADG	F:G
Cow – Calf			
Implant	3.07%		
Stocker			
Implant		12.85%	
Feedlot			
Implant		14.13%	-8.79%

**Lawrence and Ibarburu, 2006; Elam and Preston
2004**

Effect of ionophores and repartitioning agents

Segment	ADG	F:G
Stocker		
Ionophore	7.74%	
Feedlot		
Ionophore	2.90%	-3.55%
Beta-agonist	14.04%	-12.59%

**Lawrence and Ibarburu,
2006**

Fermentation modification

- Monensin approved for use in beef cows
 - Depending on dosage
 - 50 mg / day feed at 95% requirement
 - 200 mg / day feed at 90% requirement
 - Blend with a minimum of 1 pound of supplement limit-fed or delivered in TMR



Effect of Pesticides

Segment	WW	ADG	F:G
Cow – Calf			
De-wormer	4.24%		
Fly control	2.56%		
Stocker			
De-wormer		17.79%	
Fly control		8.09%	
Feedlot			
De-wormer		5.59%	-3.91%

Lawrence and Ibarburu, 2006

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